

## **APPENDIX A**

### **SCOPE OF EMERGENCY SERVICES FOR FACILITIES CONDITIONS ASSESSMENT FOR THE SEWERAGE AND WATER BOARD**

This emergency scope of work proposes to assist the Board address the immediate needs in areas where Contractor can bring considerable value immediately. This scope has been optimized to bring our available resources to help the Board meet the declared state of emergency.

This scope is predicated on full access to the facility, plant records, failure history and full participation of facility staff. Without access to all available information, the overall value of the review will be negatively impacted. Our scope of work has been developed recognizing the importance of and gaining the benefit of the considerable institutional knowledge inherent in Board personnel so considerable access to them is assumed. Ideally, having a Board expert assigned to our technical teams would facilitate these efforts. Work we completed on the recent NOLA Resilience Study has already established working relationships with many Board personnel and resulted in Contractor having a database of information to build on. This experience will expedite the work effort.

This Appendix will be modified in writing as Tasks are revised or added:

#### **TASK 1: Asset Hierarchy Development**

Develop a comprehensive asset hierarchy for all drainage pump stations, power generation and power distribution assets. A comprehensive asset hierarchy which specifies every item of plant which requires maintenance attention of any kind, is the foundation of successful maintenance management at the Board.

In the absence of such a hierarchy, it is exceptionally difficult, if not impossible, to ensure that the maintenance requirements of each item of plant are considered on a formal basis and our experience has indicated this absence will always result gaps and omissions. Furthermore, such a hierarchy enables management to track those machines for which preventive maintenance schedules have been written, and permits the schedules to be reviewed on a systematic basis easily and quickly. It also provides the basis for proper history analysis.

The asset hierarchy development effort will consist of the review available drawings, collection and review of operating data, site visits to pump stations and power generating facilities, and interviews with Board operations and maintenance personnel.

#### **TASK 2: Asset Criticality**

Perform an Asset Criticality Assessment on each drainage pump station, power generation, and power distribution asset hierarchy.

The Asset Criticality analysis will include:

Safety impacts of asset failure

Operational impacts of asset failure



Regulatory/Environmental impacts of asset failure

Economic impacts of Asset management

Veolia will assign a numerical criticality rating to the asset and enter the data into Veolia's proprietary Contract Asset Renewal Management System (CARMS). The criticality along with the condition grade will be analyzed by the CARMS tool to provide an overall picture of the asset risk. Utilize the asset database in conjunction with the condition grade to establish an overall picture of the asset risk. The outcomes of the analysis are the consequence priority and the relative risk.

Conducting an asset prioritization analysis is an important part of the asset reliability process. The information generated by the analysis will enable the Board to better target reliability improvement projects, maintenance strategy development, work planning, and scheduling.

### **TASK 3: Condition Assessment**

Perform a Condition Assessment on the Board's assets associated with the drainage system. This scope will include the following:

1. Power Generation
2. Power distribution
3. Drainage Pumping Stations
4. All suction and discharge piping and canals associated with the drainage pumping station.
5. Pumping Station Intake and discharge structures
6. Pump Station Structures

The scope under this Task 3: Condition Assessment shall not include catch basins or conveyance piping (i.e., buried pipe).

And will include the following steps:

1. Develop Condition Assessment strategy and develop guidelines for establishing condition assessment criteria, weight, risk and age impact based on Asset Class and Criticality, and identify available scoring sources.
2. Conduct a review of all existing reliability logs and interview facility staff to understand asset reliability and failure history.
3. Utilize predictive maintenance technologies (i.e.- Motor circuit analysis, Vibration analysis, oil analysis, transformer dissolved gas analysis, thickness testing, infrared thermography, Ultrasonic, and visual observations).
4. Review all data collected for the purposes of establishing an overall asset condition score.
5. Develop and populate a system grading database that can be used to store and track condition assessment data and final condition grading.
6. Format the final data scoring those assessments for detailed condition grading, and relative risk analysis to be used in Repair / Replace decision making and future capital spend analysis and requirements planning.



7. Define Asset Class condition assessment definitions and prepare standard templates for condition assessment collection, scoring and aging.
8. Identify and develop strategies and tools to collect condition assessment data and provide scoring details from the identified sources.
9. Collect, analyze, and score condition assessment data from identified sources, and report results in a format useful to the ongoing condition assessment program.
10. Interface the Condition Assessment scoring, aging, and risk components to store and update results in a database.

#### **TASK 4: Pumping Capacity Testing**

The goal of this task is to establish the actual available capacity and hydraulic capabilities of Drainage System pumping stations. It will include the following:

1. Determine the current hydraulic capabilities of individual pumps and projected total flow capabilities of pumping stations through field collected, measured, flow data. Review design documentation, prior technical studies, and relevant flow modeling to determine the intended design flow of individual pumps and the collective pumping station.
2. Execute a testing plan to determine actual full-flow capabilities of each pump through temporarily installed ultrasonic flow measurements, motor amperage, inlet and outlet pressures or derived volume assessments.
3. Compare measured flow results to design. Provide report on individual pump capabilities, projected pumping station capability and identified deviations from design flow.
4. Assess data to provide potential reasons for deviations and provide recommendations for further action.

Recommendations will be made on short term corrective actions and long term maintenance requirements.

#### **TASK 5: Drainage System Assessment**

The goal of this task is to determine if deficiencies in the drainage collection and conveying system are significantly affecting pumping station performance. It will include the following:

1. Review of available flow data, historical flow modeling, CCT inspections, and condition assessments for system.
2. Establish a representative sample set of collection and conveying points relevant for interpolating the overall system condition. Determine design hydraulic capabilities and design intents of the select sample points. Provide representative field observations on which City's engineer can calibrate the existing hydraulic flow model. Estimate system wide diminished capacity based on calculated deviation between design capacity and actual capacity for selected sample set.
3. Provide report on estimated drainage system-wide diminished capacity, and possible pumping station operational effects as a result of deviations from design.



4. Evaluate resources needs (labor and equipment) needed to properly maintain drainage system.

Recommendations will be made on short term corrective actions and long term maintenance requirements.

#### **TASK 6: System Visibility and Analytics**

Review the existing Drainage Pump Station configuration to determine if the system can be modified to add instrumentation and communication devices to give better visibility to real time operational status. With an emphasis on short-term monitoring to address the emergency situation, as well as long-term consideration, recommendations will be made that will allow for the following:

1. Installation of Instrumentation (temporary and permanent) that will provide operational status of equipment in the short-term to address the emergency situation and serve as the basis for the installation of a broader oversight program, such as Waternamics, in the event a long-term solution is eventually pursued. This work will provide some critical operating parameters to be displayed in a control room.
2. Develop a program for critical control data collection and aggregation.
3. Evaluate key parameters that could be sent to a centralized SCADA system for central oversight of pump and pump station operational conditions.
4. Make capital investment recommendations related to implementing a centralized data system that can be used to manage operations and provide transparency to plant availability.

#### **TASK 7: Storm Drainage System Review**

From our prior work and interviews, we understand that the Board is not the only entity that has impact on performance of the drainage system. For example, Public Works is responsible for street cleaning and catch basin cleaning, both of which significantly affect the drainage systems ability to convey water. This task, closely related to Task 5, will provide a high-level review of the impact this multi-jurisdictional responsibility has on the hydraulic performance of the system and may have on the Board to meet its immediate performance improvement objectives. Red flags and potential gaps in service delivery will be identified and possible options to correct any deficiencies will be raised. The immediate concern is to identify opportunities for the Board to coordinate closely with Public Works to address hydraulic capacity issues and a coordinated response to concerns raised. Secondary will be to identify overall funding and resource gaps and discuss options to address them.

#### **TASK 8: Resource and Personnel Availability**

Contractor has considerable resources and capability to support the Board through the emergency situation and we will make such resources available to the Board as it may require and we have available. This stand-by Task will only be undertaken with pre-approval of the Board and any costs (the stand-by aspect is not a cost to the Board) will be agreed to before any additional



support is provided. Contractor will, to the extent doing so will not interfere with its business or breach its obligations to the Board or other customers, provide additional operations and maintenance staff on a temporary and as needed basis as determined by the Board, at the rates set forth in this Agreement.

Optional services for consideration:

Task 8a - Steam Turbine Rehabilitation Assistance.

Leverage Contractor OEM relationships, technical resources and operational experience to expedite the reassembly of Combustion and Steam Turbines

Task 8b - Condition Monitoring Equipment.

Specify, manage and oversee the installation and implementation of vibration, and pump flow permanent instrumentation for ongoing condition and capacity visibility of pumping stations.

Task 8c - Develop Long-Term Plan for Electrical Independence.

Evaluate Board options for long-term power supply and provide recommendations for electrical supply resiliency.

Task 8d - Implementation of Waternamics.

Supply and oversee the implementation of Veolia Waternamics network operation intelligence.

Task 8e – CMMS (Computerized Maintenance Management System) Installation

Source and manage the installation of a complete and operational CMMS. Train applicable staff and generate site-specific procedures for system use and upkeep.





April 5, 2018

**Subject: Amendment 2 - Veolia Emergency Services Condition Assessment**

Dear Mr. Adams,

It is our pleasure to submit this contract amendment proposal to address testing gaps and follow-on work that resulted from the Condition Assessment of the drainage, power distribution and power generation systems executed by Veolia under an emergency order in contract executed on August 25, 2017.

While the Condition Assessment Report has been delivered on Friday, February 23, 2018 (i.e. the 2<sup>nd</sup> revision – the original version was submitted December 8, 2017), there are a number of remaining tests on assets that were not addressed due to numerous constraints including the short time frame outlined in the contract. The data from such tests enable S&WB to better predict and manage equipment that are in the process of failing and as a result, inform its maintenance program.

To further bolster its operations and ability to maintain the drainage system, Veolia's scope of work involved the development of a Visibility & Analytics platform that provided S&WB operations staff and executive management both local and remote visibility into core operating parameters of its drainage system. Indeed, during a recent emergency freeze weather event, water pressure data from the Pi platform - despite not being officially released – was utilized to monitor the situation and better communicate when pressure was likely to return in certain areas.

This combination of continued work to complete the Condition Assessment diagnostic testing gaps and to continue building an operations tool to more effectively manage the system in both emergency and non-emergency events is the subject of this proposal to amend the existing Condition Assessment contract.

Below, in the sections, (1) Scope of Work, (2) Breakdown of Additional Compensation and (3) Timeline to request to increase Veolia's existing contract cap from \$5,766,971 to \$8,651,449 (\$2,884,478 increase) as well as extend the contract term through September 30, 2018 is detailed in this proposal.

Note that the original Condition Assessment Report provided originally to the Board on December 8, 2017 will not be modified by the Scope of Work performed under this Second Amendment. Rather, any deliverables set forth below will be performed and reflect specifically the work described herein and set forth in the Second Amendment.

#### **(1) Scope of Work**

The following table summarizes the proposed scope of work for this contract amendment. Rows 1 - 10 of the table below has an associated proposal attached as an appendix to this letter that details the associated scope of work, methodology, budget and schedule.





Task	Scope	Description	2018 Timeframe	*Amount
1a	Vibration	Assessment to identify abnormal or elevated vibration readings on rotating equipment components indicative of wear and other potential condition issues.	March 1 - July 27	\$ 64,505.80
1b	Pump Capacity Testing	Determine actual capacity of a pump to remove drainage water. This includes all outstanding drainage pumps, plus various others (powerhouse and underpass stations).	March 1 - July 27	\$ 532,055.62
1c	Motor Circuit Analysis	Determine if any motor circuits have insulation degradation or other electrical issues.	March 1 - July 27	\$ 38,630.80
1d	Vacuum Pump / System Assessment	Determine the capabilities to effectively prime certain types of drainage pumps.	March 1 - July 27	\$ 11,620.98
1e	Structural Assessment	Comprehensive structural assessment of buildings, concrete structures and the like.	March 1 - July 27	\$ 108,530.10
2	Additional Potable Water Distribution System Pressure Monitoring	Develop visibility into the potable water distribution system operation as a whole is currently limited. This proposal includes the installation / integration of extensive pressure monitoring, clearwell / elevated tank level monitoring and flow measurement equipment.	March 1 - July 27	\$ 346,996.72
3	Visibility Platform Development Phase 1A	Includes second phase of equipment installation of Meter I/Os, which provides detailed status of pumps and surrounding equipment including feeder breakers, breakers to transformers in the station and status of bus tie breakers. This also includes evolution of Software Development, Alarming System Development, Detailed Documentation Development and Hand-Offs, Additional Interface Facilitation with Amry Corps SCADA and GIS and additional connection to 9 stations and the Plant Frequency Changer system.	March 1 - July 27	\$ 1,022,403.40
4	Long Term Support of Pi	(1) provide long-term technical support for all facets of the Visibility Platform; field wiring, meters, programmable logic controllers, communication systems, SCADA hardware and software, and data historian development and functionality, and (2) accommodate a gradual transition of this technical support function to nominated S&WB employees.	30-Sep-2018	\$ 340,691.28
5	Program Management	10% of total sub task costs. Deliver weekly progress reporting to management and operations staff of all ongoing tasks, deploy, manage and monitor requisite resources (Veolia and Subcontractors), provide single point of contact to S&WB for any questions related to the project implementation. Fee is inclusive of temporary office accommodations for Veolia staff.	7 Months March 1 - Sept 30	\$ 419,043.47
6	Resource & Personnel Availability	Veolia has considerable resources and capability to support the Board through the emergency situation and will make such resources available to the Board as it may require and Veolia has available (e.g. Emergency Operator Support, Root Cause Failure Analyses, etc.). This stand-by Task will only be undertaken with pre-approval of the Board and will be agreed to before any additional support is provided. Funding for this task will be provided as Change Orders to the existing Contract Cap.	30-Sep-2018	--
Total				\$ 2,884,478.17

## (2) Breakdown of Additional Compensation

The additional compensation is broken down into: (i) Veolia Labor (\$1,519,667.71), and (ii) Subcontractor Costs (\$1,364,810.46). Further detail of these costs is set forth below:





These fees represent 46.6% (\$1,343,448.89) for the drainage system, 20.7% (\$597,016.28) for the wastewater system and 32.7% for the water (\$944,013.00) system.

## I. Veolia Labor

Employee Last	Task No.	Task	Hours	Unburdened Rate * 3.38	Amount
Batterman, Stefan	2	Additional Pressure Monitoring	108	\$220.91	\$23,858.28
Davoine, JC	2	Additional Pressure Monitoring	96	\$269.31	\$25,853.76
Thompson, Francis	2	Additional Pressure Monitoring	240	\$192.73	\$46,255.20
Lovera, Maurin	2	Additional Pressure Monitoring	120	\$166.04	\$19,924.80
Redden, Cameron	2	Additional Pressure Monitoring	156	\$175.38	\$27,359.28
Glover, Peter	2	Additional Pressure Monitoring	144	\$157.34	\$22,656.96
15% Contingency	2	Additional Pressure Monitoring	N/A	N/A	\$45,260.44
Johnson, Bill	3	Platform Dev 1A	1428	\$96.74	\$138,144.72
Quirk, James	3	Platform Dev 1A	960	\$96.60	\$92,736.00
Redden, Cameron	3	Platform Dev 1A	400	\$175.38	\$70,152.00
Batterman, Stefan	3	Platform Dev 1A	448	\$220.91	\$98,967.68
Davoine, JC	3	Platform Dev 1A	384	\$269.31	\$103,415.04
Contingency	3	Platform Dev 1A	N/A	N/A	\$40,000.00
Batterman, Stefan	4	Long Term PI Support	360	\$220.91	\$79,527.60
Davoine, JC	4	Long Term PI Support	288	\$269.31	\$77,561.28
Johnson, Bill	4	Long Term PI Support	360	\$96.74	\$34,826.40
Quirk, James	4	Long Term PI Support	360	\$96.60	\$34,776.00
Contingency	4	Long Term PI Support	N/A	N/A	\$15,000.00
Javier, Mia	5	Program Management	800	\$216.75	\$173,400.00
Redden, Cameron	5	Program Management	417	\$175.38	\$73,143.47
Harvey, Jeffrey	1a	Vibration	155	\$216.40	\$33,542.00
15% Contingency	1a	Vibration	N/A	N/A	\$8,413.80
Glover, Peter	1b	Pump Capacity Testing	424	\$157.34	\$66,712.16
Redden, Cameron	1b	Pump Capacity Testing	80	\$175.38	\$14,030.40
15% Contingency	1b	Pump Capacity Testing	N/A	N/A	\$69,398.56
Harvey, Jeffrey	1c	Motor Circuit Analysis	80	\$216.40	\$17,312.00
15% Contingency	1c	Motor Circuit Analysis	N/A	N/A	\$5,038.80
Higginbottom, Mark	1d	Vacuum Pump / System Assessment	60	\$168.42	\$10,105.20
15% Contingency	1d	Vacuum Pump / System Assessment	N/A	N/A	\$1,515.78
Harvey, Jeffrey	1e	Structural Assessment	160	\$216.40	\$36,624.00
15% Contingency	1e	Structural Assessment	N/A	N/A	\$14,156.10
				<b>Total</b>	<b>\$1,519,667.71</b>

## II. Subcontractor Costs

Task	Task	Subcontractor	Equipment / Service Description	Amount
1a	Vibration	Adma	Vibration data analysis	\$20,500.00
1b	Pump Capacity Testing	CC Lynch	Flow Measurement & Analysis	\$321,975.00
1b	Pump Capacity Testing	Dale Stochtil	Staff Gauge Surveying and Verification of Components	\$25,270.00
1c	Motor Circuit Analysis	Adma	Setup and Analysis components of the Motor Circuit Analysis	\$8,000.00
1c	Motor Circuit Analysis	Kevin Clark Electrical	Disconnection and reinstatement work components of MCA	\$6,800.00
1d	Structural Assessment	Middough Engineering	Structural Assessment	\$52,500.00
2	Pressure Monitoring	Red Group	Pressure - Plumbing related to the integration of pressure monitors	\$7,140.00
2	Pressure Monitoring	Red Group	Pressure - Integration of electrical	\$8,400.00
2	Pressure Monitoring	Red Group	Flow - Venturi Flow Devices and Communications Modules - Labor	\$27,000.00
2	Pressure Monitoring	Red Group	Flow - Venturi Flow Devices and Communications Modules - Materials	\$27,000.00
2	Pressure Monitoring	Ayco	Pressure Transducers & Communications Modules	\$53,940.00
3	Platform Development 1A	Red Group	Electrical integration support - Meter I/O, Site Acceptance Testing, I/O Development, Documentation and integration of Plant Frequency Changer and 11 Drainage Pumps	\$332,900.00
3	Platform Development 1A	Mission RTU	Mission RTUs for DPS 15, 18, Clearider and Elaine	\$45,813.60
3	Platform Development 1A	SATEC	Meter I/O Adapter Module Protector Units	\$30,000.00
3	Platform Development 1A	SATEC	Meter units for Plant Frequency Changer, 11 Drainage Pumps and spares	\$26,730.00
4	Long Term PI Support	Red Group	Electrical - Nominal allowance for field work, troubleshooting, etc.	\$60,000.00
4	Long Term PI Support	Red Group	SCADA - Nominal allowance for I/O screen development, troubleshooting, etc.	\$30,000.00
5	Program Management		Temporary Office Arrangement Fee	\$22,500.00
5	Program Management		15% Contingency on Temporary Office Arrangement Fee	\$2,050.00
1a	Vibration	Subcontractor Total Mark-Up		\$34,719.50
1b	Pump Capacity Testing	Subcontractor Total Mark-Up		\$1,480.00
1c	Motor Circuit Analysis	Subcontractor Total Mark-Up		\$5,260.00
1e	Structural Assessment	Subcontractor Total Mark-Up		\$12,348.00
2	Pressure Monitoring	Subcontractor Total Mark-Up		\$43,544.38
3	Platform Dev 1A	Subcontractor Total Mark-Up		\$9,000.00
4	Long Term PI Support	Subcontractor Total Mark-Up		
Total				\$1,364,810.46





April 3, 2018

**Subject: VIBRATION ASSESSMENT TESTING GAP – Scope, Methodology, Resources & Schedule**

**Scope:**

The following assets at the following locations will be the subject of completing the Vibration assessment diagnostic testing:

Test Type	Process / Location	Testing Gap Description	Test Type	Process / Location	Testing Gap Description
1a - Vibration	Boiler Process	Boiler Feed Water Pump 6	1a - Vibration	Makeup Water Process	Emergency Well Pump 1
1a - Vibration	Boiler Process	Boiler Feed Water Pump 8	1a - Vibration	Makeup Water Process	Emergency Well Pump 2
1a - Vibration	Boiler Process	Boiler Feed Water Pump 9	1a - Vibration	Power Distribution (Carrollton)	Frequency Changer 2
1a - Vibration	DPS 01	Vacuum Pump 1	1a - Vibration	Steam Turbine Process	Turbine 1 Condensate Pump
1a - Vibration	DPS 02	Pump D	1a - Vibration	Steam Turbine Process	Turbine 1 Circulating Pump
1a - Vibration	DPS 03	Constant Duty Pump 1	1a - Vibration	Steam Turbine Process	Turbine 4
1a - Vibration	DPS 03	Constant Duty Pump 2	1a - Vibration	UPS Broad	Pump 1
1a - Vibration	DPS 04	Pump E	1a - Vibration	UPS Broad	Pump 2
1a - Vibration	DPS 04	Constant Duty Pump	1a - Vibration	UPS Canal	Pump 1
1a - Vibration	DPS 04	Vacuum Pump 6A	1a - Vibration	UPS Canal	Pump 2
1a - Vibration	DPS 04	Vacuum Pump 6B	1a - Vibration	UPS Canal	Pump 3
1a - Vibration	DPS 06	Constant Duty Pump 1	1a - Vibration	UPS Franklin	Pump 1
1a - Vibration	DPS 06	Constant Duty Pump 2	1a - Vibration	UPS Franklin	Pump 2
1a - Vibration	DPS 06	Pump I	1a - Vibration	UPS Hospital	Pump 1
1a - Vibration	DPS 06	Vacuum Pump 1	1a - Vibration	UPS Hospital	Pump 2
1a - Vibration	DPS 06	Vertical Pump 1	1a - Vibration	UPS Marconi	Pump 1
1a - Vibration	DPS 06	Vertical Pump 2	1a - Vibration	UPS Marconi	Pump 2
1a - Vibration	DPS 06	Vertical Pump 4	1a - Vibration	UPS New Carrollton	Pump 1
1a - Vibration	DPS 07	Horizontal Pump D	1a - Vibration	UPS New Carrollton	Pump 2
1a - Vibration	DPS 12	Vacuum Pump 1	1a - Vibration	UPS Old Carrollton	Pump 1
1a - Vibration	DPS 12	Vacuum Pump 2	1a - Vibration	UPS Old Carrollton	Pump 2
1a - Vibration	DPS 13	Pump 3	1a - Vibration	UPS Old Carrollton	Pump 3
1a - Vibration	DPS 16	Vertical Pump 3	1a - Vibration	UPS Paris	Pump 1
1a - Vibration	DPS 17	Pump D	1a - Vibration	UPS Paris	Pump 2
1a - Vibration	DPS 19	Horizontal Pump 1	1a - Vibration	UPS Paris	Pump 3
1a - Vibration	DPS 19	Horizontal Pump 2	1a - Vibration	UPS Pontchartrain	Pump 1
1a - Vibration	DPS 19	Horizontal Pump 3	1a - Vibration	UPS Pontchartrain	Pump 2
1a - Vibration	DPS 19	Vacuum Pump 1	1a - Vibration	UPS Pontchartrain	Pump 3
1a - Vibration	DPS Grant	Vertical Pump 2	1a - Vibration	UPS Press	Pump 1
1a - Vibration	DPS Grant	Vertical Pump 4	1a - Vibration	UPS Press	Pump 2
1a - Vibration	DPS Dwyer	Raw Water Pump	1a - Vibration	UPS Press	Pump 3
1a - Vibration	DPS I-10	Constant Duty Pump	1a - Vibration	UPS St. Bernard	Pump 1
1a - Vibration	Gas Turbine Process	Gas Compressor	1a - Vibration	UPS St. Bernard	Pump 2

**Methodology:**

Subcontract with vibration assessment experts Azima DLI to apply their WATCHMAN™ Reliability services program to the remaining S&WB assets listed above. This program was used in the first round of condition assessment work performed by Veolia.





April 4, 2018

**Subject: PUMP CAPACITY TESTING GAP – Scope, Methodology, Resources & Schedule**

**Scope:**

The following assets at the following locations will be the subject of completing the Pump Capacity testing:

Test Type	Process / Location	Testing Gap Description	Test Type	Process / Location	Testing Gap Description
1b - Pump Capacity Testing	Boiler Process	Boiler Feed Water Pump 5	1b - Pump Capacity Testing	DPS 19	DPS19-HP1-PMP
1b - Pump Capacity Testing	Boiler Process	Boiler Feed Water Pump 6	1b - Pump Capacity Testing	DPS 19	DPS19-HP2-PMP
1b - Pump Capacity Testing	Boiler Process	Boiler Feed Water Pump 7	1b - Pump Capacity Testing	DPS 19	DPS19-HP3-PMP
1b - Pump Capacity Testing	Boiler Process	Boiler Feed Water Pump 8	1b - Pump Capacity Testing	DPS 19	DPS19-VTP1-PMP
1b - Pump Capacity Testing	Boiler Process	Boiler Feed Water Pump 9	1b - Pump Capacity Testing	DPS 19	DPS19-VTP2-PMP
1b - Pump Capacity Testing	DPS 01	DPS01-CD1-PMP	1b - Pump Capacity Testing	DPS Dwyer	DPSDWY-VTP1-PMP
1b - Pump Capacity Testing	DPS 01	DPS01-CD2-PMP	1b - Pump Capacity Testing	DPS Dwyer	OPSDWY-VTP3-PMP
1b - Pump Capacity Testing	DPS 01	DPS01-HPA-PMP	1b - Pump Capacity Testing	DPS Grant	DPSGRT-VTP1-PMP
1b - Pump Capacity Testing	DPS 01	DPS01-HPB-PMP	1b - Pump Capacity Testing	DPS Grant	DPSGRT-VTP2-PMP
1b - Pump Capacity Testing	DPS 01	DPS01-HPC-PMP	1b - Pump Capacity Testing	DPS Grant	DPSGRT-VTP4-PMP
1b - Pump Capacity Testing	DPS 01	DPS01-HPD-PMP	1b - Pump Capacity Testing	DPS Grant	DPSGRT-VTP5-PMP
1b - Pump Capacity Testing	DPS 01	DPS01-HPE-PMP	1b - Pump Capacity Testing	DPS Grant	DPSGRT-VTP6-PMP
1b - Pump Capacity Testing	DPS 01	DPS01-HPF-PMP	1b - Pump Capacity Testing	Makeup Water Process	Emergency Well Pump 1
1b - Pump Capacity Testing	DPS 01	DPS01-HPG-PMP	1b - Pump Capacity Testing	Makeup Water Process	Emergency Well Pump 2
1b - Pump Capacity Testing	DPS 01	DPS01-VTP1-PMP	1b - Pump Capacity Testing	Steam Turbine Process	Turbine 1 Circulating Pump
1b - Pump Capacity Testing	DPS 01	DPS01-VTP2-PMP	1b - Pump Capacity Testing	UPS Broad	Pump 1
1b - Pump Capacity Testing	DPS 02	DPS02-HPA-PMP	1b - Pump Capacity Testing	UPS Broad	Pump 2
1b - Pump Capacity Testing	DPS 02	DPS02-HPC-PMP	1b - Pump Capacity Testing	UPS Canal	Pump 1
1b - Pump Capacity Testing	DPS 02	DPS02-HPD-PMP	1b - Pump Capacity Testing	UPS Canal	Pump 2
1b - Pump Capacity Testing	DPS 03	DPS03-CD1-PMP	1b - Pump Capacity Testing	UPS Canal	Pump 3
1b - Pump Capacity Testing	DPS 03	DPS03-CD2-PMP	1b - Pump Capacity Testing	UPS Franklin	Pump 1
1b - Pump Capacity Testing	DPS 03	DPS03-HPA-PMP	1b - Pump Capacity Testing	UPS Franklin	Pump 2
1b - Pump Capacity Testing	DPS 03	DPS03-HPB-PMP	1b - Pump Capacity Testing	UPS Hospital	Pump 1
1b - Pump Capacity Testing	DPS 04	DPS04-CD1-PMP	1b - Pump Capacity Testing	UPS Hospital	Pump 2
1b - Pump Capacity Testing	DPS 04	DPS04-HPC-PMP	1b - Pump Capacity Testing	UPS Marconi	Pump 1
1b - Pump Capacity Testing	DPS 04	DPS04-HPD-PMP	1b - Pump Capacity Testing	UPS Marconi	Pump 2
1b - Pump Capacity Testing	DPS 04	DPS04-HPE-PMP	1b - Pump Capacity Testing	UPS New Carrollton	Pump 1
1b - Pump Capacity Testing	DPS 05	DPS05-CD2-PMP	1b - Pump Capacity Testing	UPS New Carrollton	Pump 2
1b - Pump Capacity Testing	DPS 05	DPS05-HPB-PMP	1b - Pump Capacity Testing	UPS Old Carrollton	Pump 1
1b - Pump Capacity Testing	DPS 06	DPS06-CD1-PMP	1b - Pump Capacity Testing	UPS Old Carrollton	Pump 2
1b - Pump Capacity Testing	DPS 06	DPS06-CD2-PMP	1b - Pump Capacity Testing	UPS Old Carrollton	Pump 3
1b - Pump Capacity Testing	DPS 06	DPS06-HPB-PMP	1b - Pump Capacity Testing	UPS Paris	Pump 1
1b - Pump Capacity Testing	DPS 06	DPS06-HPH-PMP	1b - Pump Capacity Testing	UPS Paris	Pump 2
1b - Pump Capacity Testing	DPS 06	DPS06-HPI-PMP	1b - Pump Capacity Testing	UPS Paris	Pump 3
1b - Pump Capacity Testing	DPS 06	DPS06-VTP3-PMP	1b - Pump Capacity Testing	UPS Pontchartrain	Pump 1
1b - Pump Capacity Testing	DPS 07	DPS07-CD1-PMP	1b - Pump Capacity Testing	UPS Pontchartrain	Pump 2
1b - Pump Capacity Testing	DPS 07	DPS07-CD2-PMP	1b - Pump Capacity Testing	UPS Pontchartrain	Pump 3
1b - Pump Capacity Testing	DPS 07	DPS07-HPA-PMP	1b - Pump Capacity Testing	UPS Press	Pump 1
1b - Pump Capacity Testing	DPS 12	DPS12-HPD-PMP	1b - Pump Capacity Testing	UPS Press	Pump 2
1b - Pump Capacity Testing	DPS 13	DPS13-HPG-PMP	1b - Pump Capacity Testing	UPS Press	Pump 3
1b - Pump Capacity Testing	DPS 15 Int Coast	DPS15-VTP1-PMP	1b - Pump Capacity Testing	UPS St. Bernard	Pump 1
1b - Pump Capacity Testing	DPS 15 Int Coast	DPS15-VTP2-PMP	1b - Pump Capacity Testing	UPS St. Bernard	Pump 2

**Methodology:**

Subcontract with flow measurement experts CC Lynch to apply industry standard flow measurement techniques to measure the capacities of the remaining S&WB assets listed above. This program was used in the first round of condition assessment work performed by Veolia. Modifications to the initial program were developed with S&WB staff to include the following requirements for future testing:



April 3, 2018

**Subject: MOTOR CIRCUIT ANALYSIS TESTING GAP – Scope, Methodology, Resources & Schedule**

**Scope:**

The following assets at the following locations will be the subject of completing the Motor Circuit Analysis diagnostic testing:

Test Type	Process / Location	Testing Gap Description
1c - MCA	Boller Process	Boller Feed Water Pump 8
1c - MCA	DPS 01	Constant Duty 1
1c - MCA	DPS 01	MG Set 1
1c - MCA	DPS 04	Pump D
1c - MCA	DPS 04	Constant Duty 1
1c - MCA	DPS 04	Vacuum Pump 1B
1c - MCA	DPS 04	Vacuum Pump 6C
1c - MCA	DPS 06	M/G Set 3
1c - MCA	DPS 07	Constant Duty Pump 1
1c - MCA	DPS 07	Constant Duty Pump 2
1c - MCA	DPS 19	Horizontal Pump 1
1c - MCA	DPS Elaine	Vertical Pump 1
1c - MCA	Makeup Water Process	Emergency Well Pump 1
1c - MCA	Makeup Water Process	Emergency Well Pump 2
1c - MCA	Steam Turbine Process	Turbine 1 Condensate Pump
1c - MCA	TBD	S&WB Selected Motor to Re-Test 1
1c - MCA	TBD	S&WB Selected Motor to Re-Test 2
1c - MCA	TBD	S&WB Selected Motor to Re-Test 3
1c - MCA	TBD	S&WB Selected Motor to Re-Test 4
1c - MCA	TBD	S&WB Selected Motor to Re-Test 5
1c - MCA	UPS New Carrollton	Pump 1

**Methodology:**

Subcontract with motor circuit analysis experts Azima DLI to conduct offline analysis of motors associated with the assets listed above using specialist motor circuit analysis test equipment.

All electrical disconnection and reinstatement work will be conducted by subcontractor Kevin Clark Electrical in accordance with the S&WB clearance procedures. This program was used in the first round of condition assessment work performed by Veolia.

**Pre-requisites:**

All listed assets will need to be released by S&WB to Veolia for testing to proceed. This will include a brief period of electrical disconnection while actual testing is performed.



## Kevin Clark Electrical Services, LLC

370 IRIS AVENUE  
JEFFERSON, LA 70121

985.727.0559 Phone

985.727.0560 Fax

kevin@kjces.com

La. State Lic. #43010

www.kjces.com

## Proposal

Date	Proposal#
4/5/2018	3596

**"A Professional Electrical Contractor"!**

Name / Address
Veolia North America Municipal and Commercial Business 53 State Street 14th floor Boston, MA 02109

Project
Assisting with MCA Testing on various motors in the New Orleans Area

Description	Cost
<p>Kevin Clark Electrical Services (KCES) will provide assistance in Motor Circuit Analysis testing on approximately 21 separate motors for Pump Stations in the New Orleans area as described below.</p> <p>Includes:</p> <ul style="list-style-type: none"><li>• Working hours 7:00 am - 3:30 pm</li><li>• Proper PPE and Lockout/Tagout procedures</li><li>• Verification of unit that is de-energized, isolated and locked out prior to MCA equipment attached to the motor(s)</li></ul> <p>Exclusions:</p> <ul style="list-style-type: none"><li>- Any overtime hours or weekend work</li><li>-Material, Additional safety equipment rentals/requirments</li></ul> <p>Labor per hour: \$72.00/man</p> <p>Do Not Exceed per Veolia</p> <p><b>TERMS AND CONDITIONS:</b></p> <p>1.Supervision of Work: The Client agrees that the direction and supervision of all Work rest exclusively with the contractor. Any attempt to deal directly with any of Contractor's hired laborers or any other act, which interferes with the completion of the Work under this Agreement, shall be a breach of this Agreement.</p> <p>2.Changes or Alterations: This provision applies only to Lump Sum Contracts, as changes to the Scope of Work on a Time and Materials Contract is billed to the Client on a Time and Material Basis. Any and all changes, alterations, additions, subtractions or alternatives to the Scope of Work on a Lump Sum Contract may or may not be in writing, but shall increase or decrease the contract sum to the extent that work is added or subtracted from the Scope of Work.</p>	6,800.00

**Total**

18



March 2, 2018

**Subject: VACUUM TESTING GAP – Scope, Methodology, Resources & Schedule**

**Scope:**

The following assets at the following locations will be the subject of completing the Vacuum Pump / System diagnostic testing:

Testing Gap - Category	Drainage System Category	Process / Location	Testing Gap - Description	Test Count
Vacuum Pump / System Assessment	Drainage Pumping Station	DPS 12	Vacuum Pump 2 (mods needed to test)	1
Vacuum Pump / System Assessment	Drainage Pumping Station	DPS 13	Vacuum Pump 4, Vacuum Pump 5, Emergency Vacuum Pump (mods needed to test)	3
Vacuum Pump / System Assessment	Drainage Pumping Station	DPS 11	Vacuum Pump 1 (25Hz)	1
Vacuum Pump / System Assessment	Drainage Pumping Station	DPS01	Vacuum Pump 3A (mods needed to test)	1
Vacuum Pump / System Assessment	Drainage Pumping Station	DPS04	Vacuum Pump 6B (if returned to service)	1
Vacuum Pump / System Assessment	Drainage Pumping Station	DPS06	Vacuum Pump 1 (if returned to service), Vacuum Pump 4 (configured for pressure only, not vacuum - mods needed)	2

**Methodology:**

Veolia vacuum system assessment expert Mark Higginbottom will assess the remaining S&WB assets listed above. This approach was used in the first round of condition assessment work performed by Veolia.

**Pre-requisites:**

All listed assets will need to be operated by S&WB fully loaded at a time coordinated with Veolia test personnel for testing to proceed. Veolia will require full access to these assets while in operation to perform testing. Veolia will not be in charge of the operation of any equipment.

S&WB will need to implement the following repairs / modifications in order for testing to proceed:

Asset	Required Repair / Modification
DPS01 Vacuum Pump 3A	Need to install a pressure gauge on the other side of the isolation valve to be able to perform dead head test
DPS04 Vacuum Pump 6B	Repair and return to service to enable unit to be tested
DPS06 Vacuum Pump 1	Repair and return to service (seal water supply line has failed and work order already in place with S&WB to repair line)
DPS06 Vacuum Pump 4	Reconfigure to provide vacuum rather than current pressure arrangement to test vacuum capabilities
DPS11 Vacuum Pump 1	Operate 25Hz generator to supply power to enable unit to be tested





DPS12 Vacuum Pump 2	Test gauge and isolation valve installation needed to perform tests
DPS13 Vacuum Pump 4	Replace clutch pad to return unit to service for testing
DPS13 Vacuum Pump 5	Replace clutch pad to return unit to service for testing
DPS13 Emergency Vacuum Pump	Need to be able to isolate in order to test, modification needed (isolation valve)

#### Deliverables:

Vacuum Pump / System assessment data capture and analysis by Veolia expert. Final deliverable will be a narrative for each asset encompassing asset condition and any identified condition deficiencies and recommended remedial actions.

#### Required Resources & Associated Fees:

##### I. Veolia Labor

Employee	Total Hours	Unburdened Rate * 3.38	Amount
Higginbottom, Mark	60	\$168.42	\$10,105.20
<b>Total</b>			<b>\$10,105.20</b>

Cost Category: Vacuum Assessment	Amount
Veolia Labor	\$10,105.20
Equipment	\$0.00
Subcontractor Services	\$0.00
Equipment and Subcontractor Mark Up (10%)	\$0.00
<b>Subtotal</b>	<b>\$10,105.20</b>
Contingency (15%)	\$1,515.78
<b>Total</b>	<b>\$11,620.98</b>

#### Schedule:

Assuming start date of March 5, 2018, testing will be completed, and data provided by July 27, 2018.



# Subject: STRUCTURAL ASSESSMENT TESTING GAP – Scope, Methodology, Resources & Schedule

## Scope:

The following assets at the following locations will be the subject of completing the Structural assessment:

Testing Gap - Category	Drainage System Category	Process / Location	Testing Gap - Description
Structural Assessment	Carrollton Frequency Changer	Carrollton Frequency Changer Building	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Central Control	Central Control Building	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Drainage Pumping Station	DPS 10	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Drainage Pumping Station	DPS 11	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Drainage Pumping Station	DPS 12	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Drainage Pumping Station	DPS 13	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Drainage Pumping Station	DPS 14	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Drainage Pumping Station	DPS 15	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Drainage Pumping Station	DPS 16	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Drainage Pumping Station	DPS 17	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Drainage Pumping Station	DPS 18	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Drainage Pumping Station	DPS 19	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Drainage Pumping Station	DPS 20	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Drainage Pumping Station	DPS Dwyer	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Drainage Pumping Station	DPS Elaine	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Drainage Pumping Station	DPS Grant	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Drainage Pumping Station	DPS I-10	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Drainage Pumping Station	DPS Oleander	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Drainage Pumping Station	DPS Pritchard	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Drainage Pumping Station	DPS01	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Drainage Pumping Station	DPS02	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Drainage Pumping Station	DPS03	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Drainage Pumping Station	DPS04	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Drainage Pumping Station	DPS05	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Drainage Pumping Station	DPS06	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Drainage Pumping Station	DPS07	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Gas Compressor	Gas Compressor Building	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Plant Frequency Changer	Plant Frequency Changer Building	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Powerhouse	Powerhouse Building	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Turbine 6	Turbine 6 Building	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Underpass Drainage Pumping Station	UPS Broad	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Underpass Drainage Pumping Station	UPS Canal	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Underpass Drainage Pumping Station	UPS Franklin	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Underpass Drainage Pumping Station	UPS Hospital	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Underpass Drainage Pumping Station	UPS Marconi	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Underpass Drainage Pumping Station	UPS New Carrollton	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Underpass Drainage Pumping Station	UPS Old Carrollton	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Underpass Drainage Pumping Station	UPS Paris	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Underpass Drainage Pumping Station	UPS Pontchartrain	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Underpass Drainage Pumping Station	UPS Press	Structural specialist assessment of buildings, concrete structures, etc.
Structural Assessment	Underpass Drainage Pumping Station	UPS St. Bernard	Structural specialist assessment of buildings, concrete structures, etc.

## Methodology:

Subcontract with structural assessment experts Middough Engineering to assess the S&WB assets listed above, including buildings, wet wells, dry wells, intake structures, outfall structures and other concrete structures associated with the drainage system.





## SCOPE OF SERVICES

Middough Inc. will provide the Inspection services for the New Orleans Buildings: Structural Assessment as defined by the Veolia email instructions dated February 20, 2018 and our understanding of the services as outlined herein. These services generally include field inspection, structural reports, and project management only as itemized below.

### PURPOSE:

Veolia was engaged by the S&WB in mid-2017 to perform a condition assessment of the S&WB's critical drainage system assets. Veolia has been asked to expand this assessment to include buildings and structures associated with the drainage system (drainage pumping stations, underpass pumping stations, power generation facilities, etc.). As a result, Veolia needs to make a general assessment of the condition of the buildings and structures that are within the drainage system scope. Most buildings are simple brick construction or basic equipment shelter type facilities, but there is a large powerhouse building and a number of larger drainage pumping stations which are older and need to be looked at a little more closely. The intent of the work is to evaluate the buildings and structures for any immediate needs structurally or obvious concerns (to a structural engineer) as well as to provide some guidance on the general maintenance needs over the next 20 years. There are roughly 40 structures to review. Where possible, Veolia would also like to have the structural assessment include things such as wet wells, dry wells, intake structures, outfall structures, etc. These are typical appurtenances to the stations which will need to be included to provide a full picture of each site.

### REFERENCE DOCUMENTATION:

- List of Buildings provided by Veolia via email on 2/20/18

### PROJECT APPROACH

- On-site kick off meeting and general review of objectives
- Walk down/examination of each building and structures including the drainage system structures
- Provide written report with backup photos and other documents on the conditions of the building/structures and recommended action plan (near and long term)
- Review report with Veolia, provide updates and modification to report as needed

### DELIVERABLES

- Summary of observations and findings
- Detailed description of each buildings assessment
- Opinion of current condition and major issues
- List by Building of recommendations for near term and long term repairs or modifications
- Backup documentation, including indexed photos and field notes

### ASSUMPTIONS, CLARIFICATIONS, AND UNKNOWN:

- Middough will only review structural items that are readily accessible
- Veolia or others will provide, if needed or requested, aerial equipment for close up review of elevated structures
- Middough provides for its personnel PPE that includes hard hat, safety glasses, hearing protection, steel toed shoes and certain gas monitors.
- Lodging expenses are estimated at \$120 per night including taxes using Department of Labor information for the New Orleans, LA area.





April 4, 2018

Mr. Bob Turner  
Interim Team Coordinator  
**Sewerage & Water Board of New Orleans**  
8800 S. Claiborne Ave.  
New Orleans, LA 70118

**Subject: QUOTATION TO INSTALL AND INTEGRATE POTABLE WATER DISTRIBUTION SYSTEM PRESSURE, LEVEL AND FLOW MONITORING EQUIPMENT FOR THE SEWERAGE AND WATER BOARD (S&WB)**

Mr. Turner,

Per your request, we are submitting this budgetary proposal to (1) install potable water distribution system pressure monitoring equipment, (2) incorporate existing level monitoring equipment into S&WB's visibility platform and (3) reinstate existing flow measurement equipment at the following locations:

	Equipment Type	Location	Total Estimated Cost
1	Pressure Monitoring	<ul style="list-style-type: none"> <li>• NOFD Fire Stations (10 select locations)</li> <li>• Drainage Pumping Stations 4, 10, 14, 17, 20 and Pritchard</li> <li>• Sewerage Pumping Station A</li> <li>• Mobile Pressure Monitoring Units (4 battery powered units total)</li> <li>• S&amp;WB sewerage pumping stations (integration of existing pressure switch data only)</li> </ul>	\$142,000
2	Level Monitoring (assume that all level monitoring equipment is existing and that this information will be captured as-is rather than installing new equipment)	<ul style="list-style-type: none"> <li>• Carrollton Water Purification Plant               <ul style="list-style-type: none"> <li>○ Pumping Station Clearwells</li> <li>○ Sycamore Filter Gallery Clearwell</li> <li>○ Claiborne Filter Gallery Clearwell</li> <li>○ Claiborne Storage Tanks</li> </ul> </li> <li>• Westbank               <ul style="list-style-type: none"> <li>○ Westbank Clearwell</li> <li>○ Westbank High Lift Suction</li> <li>○ Westbank Elevated Tank</li> </ul> </li> </ul>	\$19,000





3	Flow Measurement (assume that existing Venturi type flow measurement devices can be reinstated)	<ul style="list-style-type: none"><li>• Carrollton Water Purification Plant<ul style="list-style-type: none"><li>○ High Lift 30", High Lift 36", Leonidas 50", Panola 48", Sycamore 43.31", Gen Ogden 50"</li></ul></li><li>• Westbank<ul style="list-style-type: none"><li>○ West Bank Power 20" High Lift, West Bank Power 24" High Lift Main, West Bank Power 36" High Lift</li></ul></li></ul>	\$141,000
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The work proposed herein would be additional scope under the Task 6 Visibility & Analytics Platform Development that was part of the Emergency Professional Services Agreement (the "EPSA") entered into as of August 25, 2017 between the Sewage and Water Board of New Orleans ("S&WB") and Veolia Water North America-South, LLC.

The S&WB has asked Veolia to (1) investigate a means of monitoring potable water distribution system pressure, water levels, and flows at select locations, (2) install approved pressure monitoring, level monitoring and flow measurement equipment and (3) integrate the pressure monitoring, level monitoring and flow measurement equipment within the systems installed under Task 6, including the Pi data historian. The installation will involve the following:

1. Review of available drawings, GIS data, and related files associated with the Carrollton Water Purification Plant, Algiers Water Purification Plant and potable water distribution systems
2. Identification of preferred pressure monitoring solutions and installation locations
3. Extraction and linking of existing level monitoring signals
4. Reinstatement of existing flow measurement equipment
5. Liaise with S&WB staff for approval to proceed
6. Installation and integration of new equipment<sup>1</sup>
7. Documentation and reporting

**Timeline:**

Final integration will be complete within 5 weeks of the approval of the Proposal.

**The Team:**

Veolia will work under the oversight of the Sewerage & Water Board Interim Team Coordinator.

<sup>1</sup> Installation and integration to include (1) **pressure monitoring**: threading approved pressure transducers into existing tap locations and mounting of communications equipment only, (2) **level monitoring**: no equipment installations included assuming that all existing equipment can be used (appropriate level monitoring transducers can be installed in suitable locations if deemed necessary as outlined below), and (3) **flow measurement**: reinstating existing Venturi style flow measurement devices and mounting of communications equipment only. Any civil works, installation of level monitoring equipment, new tapping into distribution mains or other pipes for pressure monitoring equipment, replacement of existing flow sensing pipework, installation of access vaults, traffic management, running of conduit, hard wiring, reinstatement, etc. shall be either managed and delivered by 1) S&WB, or 2) Veolia as change order work on a case-by-case basis.



## **Appendix: Instrumentation Overview**

### **Pressure Monitoring**

The proposed pressure monitoring solution was developed with Veolia instrumentation and distribution system experts and is based on installing remote pressure transducers which will communicate via cellular networks and be captured into SCADA. Exact installation locations will be developed and proposed to S&WB for acceptance prior to proceeding. The units come as a package estimated at \$3,000 purchase per device (21 devices total for the base option, number of devices TBD for extended option). Ongoing costs include annual cellular communications plans at approximately \$250 per device per year. Hardwired installations will be performed preferentially where practically possible. Where hardwiring is not the best option, the units will be battery powered (approximately 2 year life, easy to replace). Assumption is that suitable installation locations exist for each installation and that the installation effort will be limited to threading approved pressure transducers into existing tap locations and mounting of communications equipment only. 110 V AC power availability is also assumed.

### **Level Monitoring**

The following instruments are assumed to be maintained, functional and suitable for direct use in the data historian. The assumption is that no equipment installation, communications infrastructure, etc. will be necessary. Existing instrument list:

- CLEAR WELL LEVEL (F\_CV)
- CLAIBORN.TANK\_EV.F\_CV
- TANKS LEVEL (F\_CV)
- Clear Well Level at Sycamore (F\_CV)
- SYCAMORE.CW\_OFFSET\_CALC.F\_CV
- West Bank Power CW Storage Level (F\_CV)
- West Bank Power Elevated Tank Level (F\_CV)
- West Bank Power High Lift Suction (F\_CV)

Appropriate level monitoring transducers can be installed in suitable locations if deemed necessary by S&WB. Any such installations shall be either managed and delivered by 1) S&WB, or 2) Veolia as change order work on a case-by-case basis.

### **Flow Measurement**

The proposed flow measurement solution was developed with Veolia instrumentation and pumping system experts and is based on reinstating existing Venturi type differential pressure flow meters or installing new non-invasive clamp on style flow meters. The assumption with existing Venturi type meters is that basic reinstatement of water lines and installation of new differential pressure cells is all that will be required to obtain an accurate flow measurement. This extends to assuming that such an option will be possible for current High Lift 30", High Lift 36", Leonidas 50", Panola 48", Sycamore 43.31", Gen Ogden 50, West Bank Power 20" High Lift, West Bank Power 24" High Lift Main and West Bank Power 36" High Lift meters. Exact equipment options and installation locations will be developed and proposed to S&WB for acceptance prior to proceeding. Costs associated with reinstating existing Venturi type meters are difficult to predict at this point – assumption is that the delivered cost will be \$5,000 per unit. This includes re-using existing Venturi devices, sensing pipework, instrument cabinets, space heaters, etc. 110V AC power availability is also assumed at each location. Installations will be limited to replacing differential pressure cells and establishing data

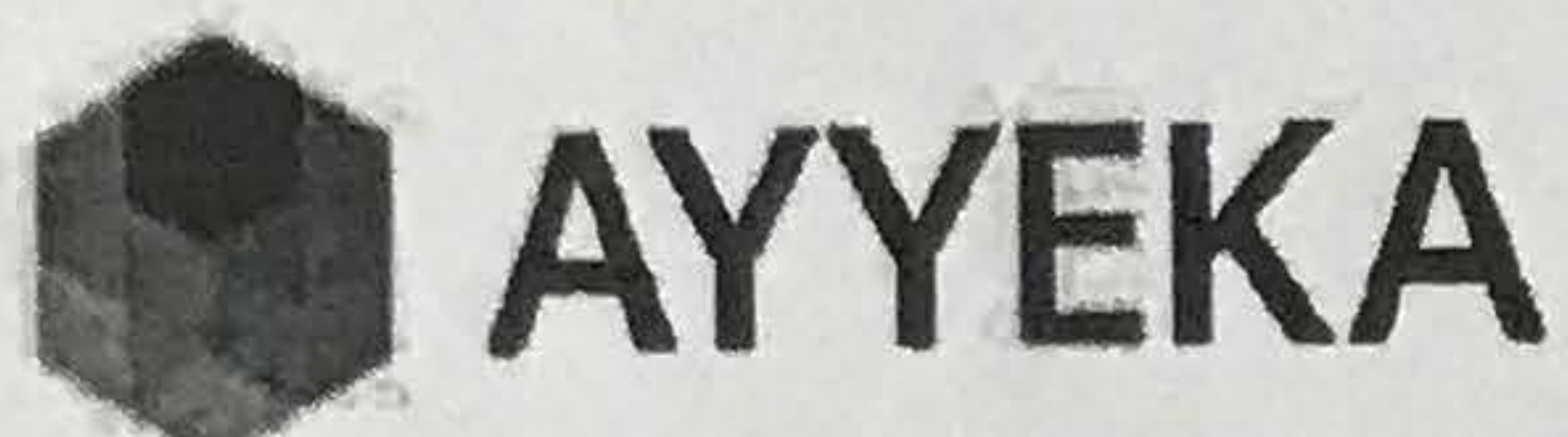




communications only. Any significant increase in individual meter reinstatement cost will be treated as a change order on a case-by-case basis, including such items as 1) if sensing lines are determined to need to be replaced, 2) if 110V AC is unavailable and alternative power and space heating options are needed, etc. Hardwired installations will be performed in all cases unless wireless options offer a more cost effective solution.

No allowance has been provided for the installation of new clamp on style flow meters. Any such installations will be treated as a change order on a case-by-case basis. If installations are deemed necessary, the assumption would be that suitable installation locations exist and that installations will only require physically mounting the units and providing basic communications infrastructure. The clamp on style flow meters come as a package estimated at \$15,250 purchase and specialist installation per device. Additional costs will be incurred if installation locations are limited, and any additional flow measurement equipment is required and / or if submersible transducers are required.





# QUOTE

**From:**

Ayyeka, Inc.  
One Gateway Center, Suite 2600  
Newark, NJ, 07102  
USA  
sales@ayyeka.com  
+1 (310) 876-8040

Job #	Quote #	Date Prepared
VeoliaNOLA01	20180405DD-1	04/05/2018

Est. Shipping	Payment Terms
4 - 6 weeks after receipt of PO	Net 30 Days

**Bill To:**

Melissa Ordoyne  
Veolia North America  
6501 Florida Ave  
New Orleans, LA 70117  
stefan.batterman@veolia.com  
+1 504 277 5400/+1 504 234 8219

**Ship To:**

Melissa Ordoyne  
Veolia North America  
6501 Florida Ave  
New Orleans, LA 70117  
stefan.batterman@veolia.com  
+1 504 277 5400/+1 504 234 8219

**Subject: Wavelet Pressure Kits**

Model #	Description	Qty	Unit Price	Total Price
WA0111	Basic Wavelet - Combined ■ Wavelet Device with (1) 8-pin Analog Port, (1) 8-pin Serial Port, (1) 5-pin Discrete Port & Wavelet Activator ■ 2G/3G/4G Global SIM Card ■ Internal Lithium Battery ■ Installation Hardware ■ External Power Connector	21	\$1,799	\$37,779
SE000130	Pressure Sensor, 0 - 6.9 bar (0-100 psi), 4.5m (15 ft) cable.	21	\$305	\$6,405
WA00150	External AC Adapter 110V - 240V, 2A, US Wall Plug (Type A), M8 3-Pin Female Connector, 60" Cord (Set of 5)	21	\$160	\$3,360
ASP - 01	Ayyeka Service Plan ■ Cellular Service Plan ■ Two-Way Cyber-Secure GPRS/GSM Data Transmission & Encryption ■ Embedded GPS ■ Web-Based User-Interface ■ SCADA Integration ■ E-Mail/SMS Threshold Alerts ■ Phone/Email Customer Support ■ Over-the-Air Configuration & Updates	21	\$250	\$5,250

Sub-Total	\$52,794
S&H	\$1,146
<b>TOTAL Due</b>	<b>\$53,940</b>



# REDGROUP

REMONT ENGINEERING &  
DESIGN GROUP, LLC.

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April 05, 2018

Mr. Cameron Redden  
Veolia North America

Re: Sewerage & Water Board of New Orleans Drainage Pump Station Improvements

Mr. Redden,

Remont Engineering & Design Group, LLC is pleased to present an estimate for pressure and flow monitoring, platform development 1A, and long term Pi support.

The Proposal, Quotations, and details of the services and materials to be provided are attached on the following pages.

Thank you for the opportunity to earn your business.

Sincerely,

Jake Mattix  
Business Development Manager





April 4, 2018

Bob Turner  
Interim Team Coordinator  
Sewerage & Water Board of New Orleans

**Subject: QUOTATION FOR VISIBILITY PLATFORM DEVELOPMENT PHASE 1A**

Dear Mr. Turner,

We are submitting this budgetary proposal to offer S&WB continued development of the Drainage System Visibility Platform. The first phase of development built from the following scope of work of Veolia's Condition Assessment contract:

**TASK 6: System Visibility and Analytics**

Review the existing Drainage Pump Station configuration to determine if the system can be modified to add instrumentation and communication devices to give better visibility to real time operational status. With an emphasis on short-term monitoring to address the emergency situation, as well as long-term consideration, recommendations will be made that will allow for the following:

1. Installation of Instrumentation (temporary and permanent) that will provide operational status of equipment in the short-term to address the emergency situation and serve as the basis for the installation of a broader oversight program, such as Watermatics, in the event a long-term solution is eventually pursued. This work will provide some critical operating parameters to be displayed in a control room.
2. Develop a program for critical control data collection and aggregation.
3. Evaluate key parameters that could be sent to a centralized SCADA system for central oversight of pump and pump station operational conditions.
4. Make capital investment recommendations related to implementing a centralized data system that can be used to manage operations and provide transparency to plant availability.

To structure the scope into an approach, Veolia broke down activities into 4 categories: (1) Hardware Installation (2) Software Development (3) Site Acceptance Testing and (4) Training & Knowledge transfer to S&WB. This involved a great deal of assessment work and coordination with S&WB IT to develop an appropriate system architecture from which to build a foundational Visibility Platform.

Indeed, the term extension requested on December 8th, due to remaining contract dollars was focused on the continued development of the Visibility Platform that was developed enough to be utilized for troubleshooting during the recent Emergency Freeze event.





In the table below, the column 'Phase 1' outlines all of the work that Veolia has completed to date (February 16, 2018) that meets the scope of work outlined above while column 'Phase 1A' outlines Veolia's proposed continuation of work.

Item	Category	Phase 1	Phase 1A	Amount
1.1	Hardware	Power Meters - 229 Installed		
		Programmable Logic Controllers - 58 panels, communications and PLCs installed, including extensive conduit and integration		
		Personal Computers - 22 installed, extensive licensing, servers, network configuration, etc.		
		High Definition Large Screen Monitors - 9 installed and functional, extensive conduit and integration	High Definition Large Screen Monitors - Conduit to complete 3 remaining units, plus training room screen DPS 17.	\$ 7,590
		Initial Piloting of Meter IO at DPS 01, DPS 02, DPS 06 and DPS 17 to provide full status information through to iFix and PI	Complete pilots at DPS 01, DPS 02, DPS 06 and DPS 17. Roll out Meter IO Modules at all stations to Monitor Status of Pumps, Bus Ties, Feeder Breakers and Motor Generators. Direct breaker feedback will be included where possible rather than indicator light status.	\$ 224,449
			Redesign Meter I/O Adapter Modules to protect from extreme DC system voltage spikes which damaged the original units	\$ 35,000
			Mission Remote Terminal Unit to Connect Four Outstanding Stations (15, 18, Oleander, Elaine)	\$ 59,500
			Level Measurement reinstatement and integration at DPS 16 + barscreen control functionality at DPS 14	\$ 11,500
			Include complete visibility platform coverage of the Plant Frequency Changer system including power metering, iFix SCADA PC and PI display development.	\$ 50,000
			Provide full visibility for 11 drainage pumps in the drainage system which currently do not have existing power sensing instrumentation installed as is needed to provide full visibility similar to other pumps	\$ 40,000
1.2	Software	Implement base iFix SCADA system and PI data historian to showcase relevant operational data per location / station. Includes extensive screen development and customization to S&WB's desires for layouts, functionality, etc.	77 PI displays currently developed, many more remain to be developed and refinement of existing displays is included in this phase. Extensive PI reporting functionality to be developed as well. iFix development has been preliminarily completed for base station displays, but extensive refinement and testing required, as well as further display development.	\$ 246,391
		Install WIN-911 ready to be configured.	Configure WIN-911 software to provide full alarming functionality with S&WB input.	\$ 37,458
1.3	Site Acceptance Testing	Ensure that all inputs of installed equipment read correctly from the input module through to the iFix SCADA system and PI data historian for all installed equipment and follows the sign-off process developed in collaboration with S&WB	Complete Site Acceptance Testing for meter and PLC installations	\$ 16,830
			Meter IO Site Acceptance Testing	\$ 136,859
		Preliminary development of all core documentation	Full completion of all core documentation, including additional drawings (plans, additional as-builts, etc.)	\$ 55,000
			Report of 'Recommended Troubleshooting Next Steps' (Initial use of Veolia Electrical Engineering Subject Matter Expert to review operating data and provide recommendations to remedy any identified issues)	\$ 11,000
1.4	Training & Knowledge Transfer to S&WB	Provided OT Job Description and commenced formal video training plan and user training plane with Interim employees.	Expand video and documentation training plan and provide actual facilitated user training for software use as well as basic development.	\$ 35,000
1.5	Additional Interface Facilitation Scope Made by S&WB	Met with Flood Authority, appears to be technically relatively simple to link systems - timing will be dependent on when Army Corps hands over PCCPs	Complete link to Flood Authority SCADA at PCCP stations	\$ 13,200
		Connection was established, ready to be developed and integrated	Complete GIS Integration	\$ 10,626

#### Timeline:

Term to extend 4 months following approval of the Proposal. Completion will be prior to the July 27th.





April 4, 2018

Mr. Cameron Redden  
VEOLIA North American

Reference: Platform Development 1A

Dear Cameron,

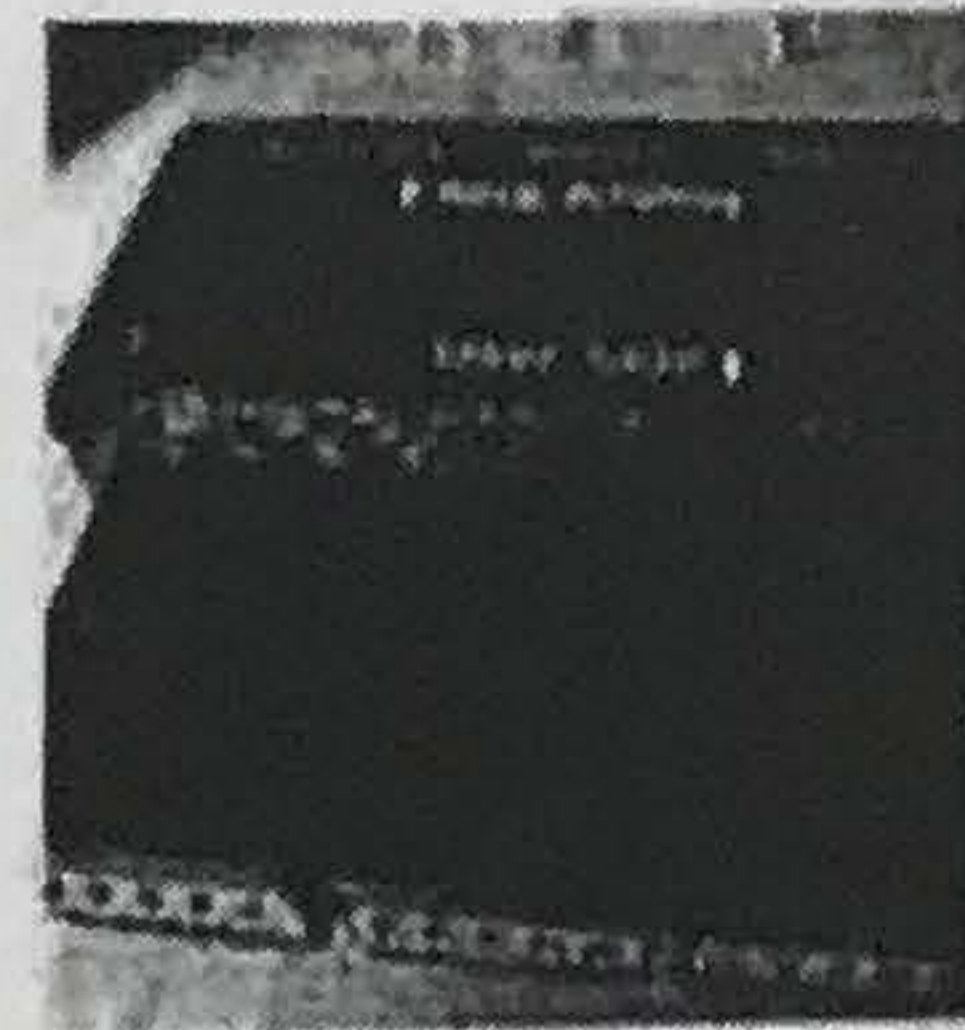
**PM130EH**



**12DIOR-ETH**



**Module w/SGE**



The below prices and configuration are the exact discounted prices I have previously provided for a quantity of 100 units. I am extending the same individual cost to you for the amount of meters you need. The only add on is the "SGE-Kit" that are the three connectors needed for each add on module.

The following is provided as per your request:

**Energy meter Series PM130EH Plus**

<u>QTY</u>	<u>P/N</u>	<u>Description</u>	<u>Unit \$</u>
1	PM130EH-plus-25Hz-5-ACDC	Energy Meter	\$ 540.00 each
1	12DIOR-125v-ETH (includes module)	12 Wetted Inputs, Isolators & Ethernet	\$ 300.00 each
1	SGE-Kit (3 SGE connectors)	Phoenix Surge Adapters	\$ 150.00 each
<i>Total for one assembly above \$ 990.00 each</i>			

*Terms: Net 30 Days*

*FOB: Union, NJ*

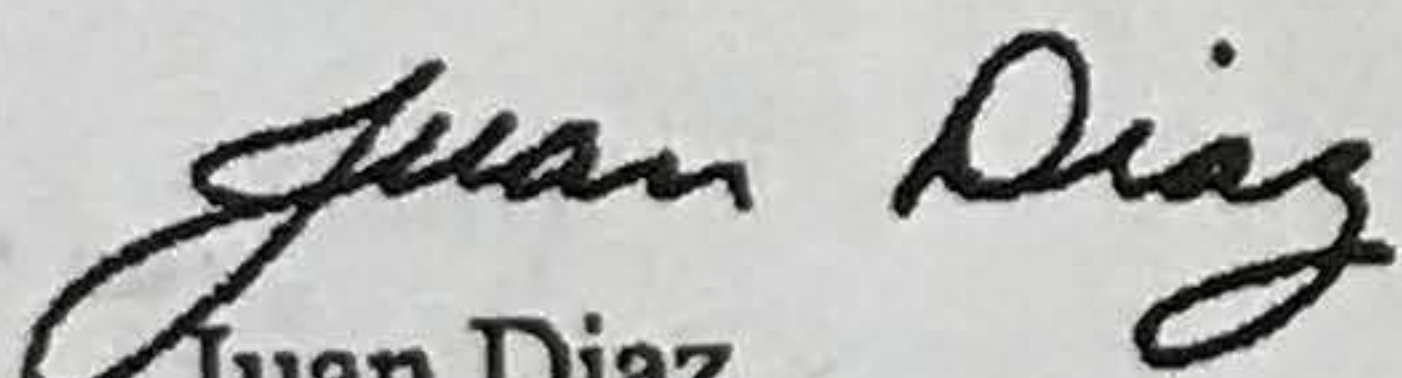
*Delivery: Stock to 3 Weeks ARO*

*Quote remains valid for 30 days*

I have the meters in stock for immediate delivery. It may take 12 days to get the rest of the items but I will expedite. If partial order is accepted at least I can deliver the meters so you can at least get those installed. Please note I have already shipped QTY 200 of the modules. Some are still on hold at The Reynolds Company. We just have to supply the isolators or SGE kit required.

Please feel free to call me direct if you have any questions.

Sincerely,

  
Juan Diaz  
Vice President

10 Milltown Court, Union, NJ 07083  
908-686-9510 Office  
908-686-9520 Fax



# J H WRIGHT & ASSOCIATES

P. O. BOX 145  
Chalmette, LA 70044

PHONE: 888-655-7867 / 251-621-1491  
FAX: 251-621-8111

## QUOTATION #



**GC0218-04**  
DATE: 2/1/2018

PREPARED BY  
**Glenn B. Cooper**

TO:	Stefan Batterman	PROJECT:	Mission MyDro Unit
COMPANY:	Veolia North America	LOCATION:	Oleander Drainage Pump Station
	2600 Christian Street		New Orleans, Louisiana
	Philadelphia, PA 19146	ENGINEER:	Unknown
PHONE:	(215) 888-8964	CONTACT:	
EMAIL:	stefan.batterman@veolia.com		
CREDIT TERMS:	30 Days	SPECS PROVIDED VIA:	
DELIVERY*:	2-3 Days	FREIGHT:	Delivered

QUANTITY	DESCRIPTION	PRICE
	MISSION COMMUNICATIONS MYDRO UNIT	\$ 9,038.40
1	MISSION M853 REMOTE MONITORING UNIT RTU HAS 8 DIGITAL, 2 ANALOG, 2 PULSE COUNTER (OPTIONAL), 1 KEY READER, 3 REMOTELY CONTROLLABLE OUTPUTS. INCLUDES A RADIO, NEMA 1 FLATPAK ENCLOSURE, ANTENNA, ANTENNA CABLE, POWER SUPPLY, BACK UP BATTERY.	
1	M853 FLATPAK REAL TIME UNIT	\$2,245.00 EACH
1	PART # SP800-12 YEARLY MONITORING FEE ----->	\$563.40 EACH
1	PART # OP465 ADAM MODULE - ANALOG INPUT ----->	\$495.00 EACH
1	PART # OP653 ADAM MODULE - DIGITAL INPUT ----->	\$495.00 EACH
1	PART # SPOP-12 YEARLY MONITORING FEE ----->	\$75.00 EACH
2	DAYS INSTALLATION, STARTUP, & MISC. MATERIALS ----->	\$2,200.00 EACH
2	VACT500-42L VOLTAGE TRANSDUCERS 0-500V INPUT-40mA OUTPUT	\$205.00 EACH
3	Freight ----->	\$ 75.00
1		
	TOTAL TURNKEY PRICE FOR OLEANDER STATION ----->	\$ 9,038.40

\*DELIVERY IS AN APPROXIMATE TIME PERIOD AFTER CUSTOMER ACCOUNT HAS BEEN SET UP, OR PAYMENT METHOD HAS BEEN APPROVED.

Due to the rising costs of raw materials, All quotations are good for 30 days. All material is subject to Engineer's final approval of submittals. JHW takes no responsibility for electrical wiring, components or terminations made by others or subsequent damages of our equipment due to faulty design and/or installation; including drives, or other devices not furnished and installed by JHW. J H Wright will not be responsible for system conditions, present or future, which may vary from original design. This includes but is not limited to hydraulic and electrical conditions.

Progress payments may be required on some orders dependant on Customer Credit/Payment history or the Equipment Manufacturers' requirements.

Under no circumstances are "retainage fees" allowed. Our prices do not include any Federal, State or Local sales taxes. All quotations are for material only and do not include any labor or installation unless otherwise noted. Manufacturer's warranty applies to all products. JHW standard terms and conditions apply. Should services of a collection agency, attorney, or other legal service become necessary for collection, purchaser shall assume all responsibility for all expenses accrued in the collection process. ANY REMAINING EQUIPMENT HELD AT JHW's WAREHOUSE WILL BE INVOICED BASED ON CUSTOMER'S ORIGINAL REQUIRED DATE, WITH PAYMENT DUE WITHIN 30 DAYS OF INVOICE DATE.

The undersigned agrees to and has the authority to bind purchaser to the terms and conditions and equipment above:

SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_ PO#: \_\_\_\_\_



**J H WRIGHT & ASSOCIATES**

P. O. BOX 145  
Chalmette, LA 70044

PHONE: 888-655-7867 / 251-621-1491  
FAX: 251-621-8111

**QUOTATION #****GC0218-01**

DATE: 2/1/2018

PREPARED BY

**Glenn B. Cooper**

TO:	Stefan Batterman	PROJECT:	Mission MyDro Unit
COMPANY:	Veolia North America	LOCATION:	Drainage Pump Station # 15
	2600 Christian Street		New Orleans, Louisiana
	Philadelphia, PA 19146	ENGINEER:	Unknown
PHONE:	(215) 888-8964	CONTACT:	
EMAIL:	stefan.batterman@veolia.com		
CREDIT TERMS:	30 Days	SPECS PROVIDED VIA:	
DELIVERY*:	2-3 Days	FREIGHT:	Delivered

QUANTITY	DESCRIPTION	PRICE
	MISSION COMMUNICATIONS MYDRO UNIT	\$ 18,698.40

1	MISSION M853 REMOTE MONITORING UNIT RTU HAS 8 DIGITAL, 2 ANALOG, 2 PULSE COUNTER (OPTIONAL), 1 KEY READER, 3 REMOTELY CONTROLLABLE OUTPUTS. INCLUDES A RADIO, NEMA 1 FLATPAK ENCLOSURE, ANTENNA, ANTENNA CABLE, POWER SUPPLY, BACK UP BATTERY.	
1	M853 FLATPAK REAL TIME UNIT	\$2,245.00 EACH
1	PART # SP800-12 YEARLY MONITORING FEE ----->	\$563.40 EACH
1	PART # OP465 ADAM MODULE - ANALOG INPUT ----->	\$495.00 EACH
1	PART # OP653 ADAM MODULE - DIGITAL INPUT ----->	\$495.00 EACH
2	PART # SPOP-12 YEARLY MONITORING FEE ----->	\$75.00 EACH
200'	1" ALUMINUM PIPE, FITTINGS, & HUBS ----->	\$2,700.00 TOTAL
5	DAYS INSTALLATION, STARTUP, & MISC. MATERIALS ----->	\$2,200.00 EACH
3	VACT500-42L VOLTAGE TRANSDUCERS 0-500V INPUT-40mA OUTPUT	\$205.00 EACH
1	PART # IT477S 0-15PSI PRESSURE TRANSDUCER ----->	\$285.00 EACH
1	PART # IT476 LOOP POWERED ISOLATOR ----->	\$75.00 EACH
1	FREIGHT ----->	\$ 75.00

TOTAL TURNKEY PRICE FOR STATION # 15 -----> \$ 18,698.40

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FAX: 251-621-8111

**QUOTATION #****GC0218-03**

DATE: 2/1/2018

PREPARED BY

**Glenn B. Cooper**

TO:	Stefan Batterman	PROJECT:	Mission MyDro Unit
COMPANY:	Veolia North America	LOCATION:	Elaine Drainage Pump Station
	2600 Christian Street		New Orleans, Louisiana
	Philadelphia, PA19146		
PHONE:	(215) 888-8964	ENGINEER:	Unknown
EMAIL:	stefan.batterman@veolia.com	CONTACT:	
CREDIT TERMS:	30 Days	SPECS PROVIDED VIA:	
DELIVERY*:	2-3 Days	FREIGHT:	Delivered

QUANTITY	DESCRIPTION	PRICE
	MISSION COMMUNICATIONS MYDRO UNIT	\$ 9,038.40
1	MISSION M853 REMOTE MONITORING UNIT RTU HAS 8 DIGITAL, 2 ANALOG, 2 PULSE COUNTER (OPTIONAL), 1 KEY READER, 3 REMOTELY CONTROLLABLE OUTPUTS. INCLUDES A RADIO, NEMA 1 FLATPAK ENCLOSURE, ANTENNA, ANTENNA CABLE, POWER SUPPLY, BACK UP BATTERY.	
1	M853 FLATPAK REAL TIME UNIT	\$2,245.00 EACH
1	PART # SP800-12 YEARLY MONITORING FEE ----->	\$563.40 EACH
1	PART # OP465 ADAM MODULE - ANALOG INPUT ----->	\$495.00 EACH
1	PART # OP653 ADAM MODULE - DIGITAL INPUT ----->	\$495.00 EACH
2	PART # SPOP-12 YEARLY MONITORING FEE ----->	\$75.00 EACH
2	DAYS INSTALLATION, STARTUP, & MISC. MATERIALS ----->	\$2,200.00 EACH
3	VACT500-42L VOLTAGE TRANSDUCERS 0-500V INPUT-40mA OUTPUT	\$205.00 EACH
1	Freight ----->	\$ 75.00
	TOTALTURNKEY PRICE FOR ELAINE STATION ----->	\$ 9,038.40

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FAX: 251-621-8111

## QUOTATION #



GC0218-02

DATE: 2/1/2018

PREPARED BY

**Glenn B. Cooper**

TO:	Stefan Batterman	PROJECT:	Mission MyDro Unit
COMPANY:	Veolia North America	LOCATION:	Drainage Pump Station # 18
	2600 Christian Street		New Orleans, Louisiana
	Philadelphia, PA 19146	ENGINEER:	Unknown
PHONE:	(215) 888-8964	CONTACT:	
EMAIL:	stefan.batterman@veolia.com		
CREDIT TERMS:	30 Days	SPECS PROVIDED VIA:	
DELIVERY*:	2-3 Days	FREIGHT:	Delivered

QUANTITY	DESCRIPTION	PRICE
	MISSION COMMUNICATIONS MYDRO UNIT	\$ 9,038.40
1	MISSION M853 REMOTE MONITORING UNIT RTU HAS 8 DIGITAL, 2 ANALOG, 2 PULSE COUNTER (OPTIONAL), 1 KEY READER, 3 REMOTELY CONTROLLABLE OUTPUTS. INCLUDES A RADIO, NEMA 1 FLATPAK ENCLOSURE, ANTENNA, ANTENNA CABLE, POWER SUPPLY, BACK UP BATTERY.	
1	M853 FLATPAK REAL TIME UNIT	\$2,245.00 EACH
1	PART # SP800-12 YEARLY MONITORING FEE ----->	\$563.40 EACH
1	PART # OP465 ADAM MODULE - ANALOG INPUT ----->	\$495.00 EACH
1	PART # OP653 ADAM MODULE - DIGITAL INPUT ----->	\$495.00 EACH
2	PART # SPOP-12 YEARLY MONITORING FEE ----->	\$75.00 EACH
2	DAYS INSTALLATION, STARTUP, & MISC. MATERIALS ----->	\$2,200.00 EACH
3	VACT500-42L VOLTAGE TRANSDUCERS 0-500V INPUT-40mA OUTPUT	\$205.00 EACH
1	Freight ----->	\$ 75.00
	TOTAL TURNKEY PRICE FOR STATION # 18 ----->	\$ 9,038.40

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